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1 IPEmotion 2019 R2.1 – General changes

1.1 Supported Languages in the Setup

- English
- German
- Italian
- Korean
- Chinese
2 New functions in PROJECT

2.1 Add Project Parameters

With the Parameter add function new parameter lines are added to the overall list of parameters. The parameter data can be updated via the IPEmotion ME app over your logger display system too. See chapter 5.3 for more details.
New functions in PROJECT

Example: How to configure a measurement file prefix

You can use specific project parameters to create your own measurement and log file name pattern. A frequently used function is a combination of logger serial number and the start time of the measurement.

The screenshot below shows a modified project parameter page with includes 2 new entries:

- **FilePrefix**
  
  With this parameter key, you can define your individual file name structure. It can be composed of constant values and different parameter key fields included in your parameter list. E.g. Constant - [Key1] – [Key 2] – [. . .]. The separators can be – or _.

- **TotalStartTime**
  
  This is an example to add date and time information to the data file name. The name pattern can be e.g. composed of: %Y%m%d-%H%M%S (Year, month, date) – (Hour, Minute, Seconds). Capital letter will show year in 4 digits (2020). In small later it will be 2 digits (20).

- **SerialNumber**
  
  This parameter field is a default value in the factory standard parameter list.
The new file prefix is now visible in the data files stored on the logger.

![File Prefix elements](image)
3 New functions in SIGNALS

3.1 Subconfigurations

The measurement configuration of IPEmotion or IPEmotion RT.UI can be split in separate elements so called “Subconfigurations”. The main benefit of this functionality is, that several teams can work together on one global measurement configuration and update and manage their measurement scopes individually. Subconfigurations can be applied to the following workspaces and elements:

- **SIGNALS**: All nodes with exception (Audio, GPS, Internal Status)
- **ACQUISITION**: Formula channels, Storage groups

In the following section the workflow, how to create and use Subconfiguration files, will be explained. It is important to know, that Subconfigurations are updated on the logger via USB drive or of the WiFi / Modem interface using IPEcloud and the FTP connection.

**Information**: The Subconfiguration (.isz) file cannot be initialized to the logger from the RT.Ui desktop software.

**Information**: The Subconfiguration (.isz) file a related to one specific logger type. You cannot use a Subconfiguration created from IPElog2-01 on M-LOG V3 (8 CAN, 2 ETH).
How to generate a Subconfiguration

You can select your node and use the context menu to save this node to an (.isz) file.

Add node to Subconfiguration

The icons are updated to visually indicate, that this node is saved to a Subconfiguration file (.isz).

Standard configuration (.irf)  
Node in Subconfiguration included (.isz)

Icons are updated to indicate Subconfigurations
The saving function of the Subconfiguration is not activated by default. The reason for this default setting is, to avoid that Subconfigurations get overwritten without any notice to the owner of the Subconfigurations.

In the OPTIONS > Basic Settings you can enable the automatic storage functionality.

When you have stored your Subconfiguration you can get an overview of all Subconfigurations (.isz) files linked to this workspace file (.irf).
The Subconfiguration administration dialog supports the following functions.

- **Add**
  Here you can load additional Subconfigurations and link them to the overall measurement configuration.

- **Unlink**
  Here you can remove the Subconfiguration from the overall configuration and it will clean the corresponding nodes on the SIGNAL and ACQUISITION workspace.

- **Move**
  With the move function you can change the list order.

**How to initialize logger with Subconfiguration**

As mentioned above Subconfigurations are no automatically initialized to the logger over the RT.UI desktop software. When you start measurement, all channels included in the Subconfigurations show new data as they are not known by the data logger.

![Image of configuration dialog]

Subconfiguration are not initialized from RT.UI to the logger
The logger can be initialized with Subconfiguration via a USB STICK or wireless via IPEcloud and an FTP connection. In this example the Subconfigurations files of both CAN nodes are transferred to a USB drive called STICK. The logger recognizes only USB drives with the name STICK.

Copy Subconfigurations to STICK

The stick is then connected to the USB port of the logger. When the yellow LED is off, the configuration is transferred, and the STICK can be removed from the logger. The yellow LED is on again and the logger operates with the new Subconfigurations.

When you start measurement in RT.UI desktop software, you will see online data also on the Subconfiguration nodes.
How to exclude Subconfigurations from current logger configuration

If you like to remove a Subconfiguration from the logger you need to use the Unlink function. After that the logger can be initialized with a new (.irf) file via LAN, USB STICK or via remote FTP connection and the Subconfiguration in concern is removed.

Unlink a Subconfiguration
How to modify and extend an existing Sunconfiguration

So far, we have created and managed one Subconfiguration of one CAN node. However, a Subconfiguration can include Formulas and Storage Groups also. In a practical use case engineers need a consistent Subconfiguration which includes not only the signals but also formulas and the corresponding data storage groups. You can add Subconfiguration from a Formula or Storage group to an existing Subconfiguration as indicated in the screenshot below.

You can only merge new elements to an existing Subconfiguration, when the target Subconfiguration is linked to configuration file. Otherwise an error message will be reported.
How to load and modify a single Subconfigurations

The concept of Subconfiguration is based on the idea, that several stake holders are using a logger for their individual purposes and that every team can change their local configuration independently without needing to touch the overall configuration file. This architecture provides a huge flexibility to modify configuration in decentralized approach. In a practical use case TEAM 1 and TEAM 2 will work independently on their configuration. Therefore, each team can load and modify the (.isz) file independently too.

Open a single Subconfiguration (.isz) file

The modifications of the Subconfiguration can be saved to the existing or new (.isz) file.
3.2 Channel reset to default

With the channel reset function all properties except the channel name a setback to factory settings.

3.3 Description file import extensions

- Import Multi-Multiplex-Parameter
- FlexRay-Signals with multiplex cycles
- Secured PDU: for ETH
- Secured PDU: for FlexRay
- FlexRay ARXML Import with dynamic PDUs
4 New functions in SIGNALS – IPEmotion RT

4.1 Support of µCROS SL

The data logger µCROS SL is supported in IPEmotion RT.

µCros SL supported in IPEmotion RT.UI

Interface overview:
The following software functions are supported for the 3 RT logger product lines:

<table>
<thead>
<tr>
<th>Package</th>
<th>Functions</th>
<th>IPELOG 2</th>
<th>M-LOG V3</th>
<th>µCROS SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT Basic package*</td>
<td>Number of bus interfaces (CAN, CAN FD, LIN, ETH, FlexRay)</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>RT Basic package*</td>
<td>Number of storage groups</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>RT Basic package*</td>
<td>Traffic (CAN, LIN, ETH, FlexRay)</td>
<td>yes</td>
<td>yes</td>
<td>CAN</td>
</tr>
<tr>
<td>RT Basic package*</td>
<td>CAN signal measurement DBC Import</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>RT Basic package*</td>
<td>X-LINK &amp; M-CAN</td>
<td>yes</td>
<td>yes</td>
<td>CAN</td>
</tr>
<tr>
<td>RT Basio package*</td>
<td>Gateway: CAN Send, XCL Slave für INCA, CANape, DIAdem</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>RT Basic package*</td>
<td>OBD, GPS</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>RT Basio package*</td>
<td>Wake on CAN/LIN</td>
<td>yes</td>
<td>WoC</td>
<td>yes</td>
</tr>
<tr>
<td>RT Basio package*</td>
<td>NML/Quitokstart</td>
<td>yes</td>
<td>Quickstart</td>
<td>yes</td>
</tr>
<tr>
<td>RT Basio package*</td>
<td>Webserver visualization</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>RT Basio package*</td>
<td>Software Maintenance</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Functions included in the basic package

<table>
<thead>
<tr>
<th>Package</th>
<th>Functions</th>
<th>IPELOG 2</th>
<th>M-LOG V3</th>
<th>µCROS SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional extensions*</td>
<td>Data storage for signals, traffic, video, etc.</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Storage groups unlimited</td>
<td>CAN, CAN FD, LIN, ETH, FlexRay</td>
<td>twofold</td>
<td>twofold</td>
<td>twofold</td>
</tr>
<tr>
<td>Bus Interface extension</td>
<td>CAN, CAN FD, LIN, ETH, FlexRay</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Protocols</td>
<td>CCP, XCP, J1939, ...</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Communication</td>
<td>Modem, WiFi, IoT connection **</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Multimedia</td>
<td>Audio and Video</td>
<td>yes</td>
<td>yes</td>
<td>Audio</td>
</tr>
<tr>
<td>Comfort display</td>
<td>App for Android and iOS including WiFi</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Additional packages – can be purchased on top of the basic package
4.2 Logger hardware detect over WiFi

The WiFi access point for IPElog2 and M-LOG V3 with COMgate V3 is by design automatically activated and configured as indicated below. The default SSID and password is the Logger_SerialNumber.

When you have established a WiFi connection between PC and logger access point, you can detect the logger, stream online data (gateway operation) to the PC and configure the logger. Also, you can copy measurement data from the logger over WiFi to the PC.
4.3 IPElog2 – M-CAN termination via software setting

The 120 Ohm M-CAN Termination can be activated with a software setting.

With this software termination you can use directly the standard M-Can cable to connect your M-Modules.
4.4 Update CAN- and X-Module firmware over data logger

The M-CAN und X-LINK modules can be updated over the data logger. When the modules are detected on the CAN and ETH connector a firmware updated function is provided. The latest released module firmware is included in the setup of the IPEmotion RT.UI software.

Update module firmware.
5 New functions in Mobile Display – IPEmotion RT

5.1 Analog Instrument

An analog instrument was added to the instrument library.

5.2 Syslog Instrument

With the SysLog instrument all public internal log messages (Log file) are transferred to the instrument. When the instrument is created the transfer is automatically activated. The internal process of the logger are pushing all new message to instrument. With the SysLog message the use gets real time information about the internal logger operation which is very practical for the operation.
The syslog instrument works for the LAN interface for IPEmotion RT:U desktop software, and the web browser application which is accessible over the IP 192.168.236.1. Also, the SysLog instrument can receive all message over a WiFi connection on the tablet (IPEmotion Mobile Edition app) and to the PC. Over the WiFi and LAN interface all buffered messages from the boot process are send to instrument also.

The SysLog message can also be retrieved over the internet via MQTT protocol. In this communication architecture, only fresh message generated from an established internet connection are transferred. In order to save bandwidth, the historical messages e.g. from the boot process are not transferred over MQTT.
5.3 Update Project Parameter

With the IPEmotion ME app users can update the project parameters during the measurement of the data logger. The default parameters are defined in the IPEmotion PROJECT workspace.

IPEmotion RT UI default parameter
There parameters are also available on IPEmotion RT.UI desktop software, app, and browser application over the LAN and WiFi connection. Parameters cannot be updated over the internet MQTT connection.

From the Overview workspace you can access the parameter dialog.
The updates and entries made to this dialog are stored to the running storage data file as well to all new measurements. The last entries made to the dialog are stored before the measurement is stopped.

**Example:**

When the storage process is operating and the driver adds comment A, this command A is stored when the measurement is stopped. When the data post processing operation is running on the logger, the parameters are updated to the data file. However, if it is the user updates during the storage process sometime later the value A to B, the latest entry B, will be included in the data file. When a new storage process is triggered the last entry in the parameter dialog, in this case B, will be stored in the new data file.

In conclusion the user can overwrite his entries many times, when the storage process is running. When the storage process is stopped the very last entry is included in the file.

When the logger gets a new configuration with new definitions in the project workspace these values are automatically updated in the app dialog and considered for storage in the header section.
5.4 Change page events

The display pages of the app can be changed via a dedicated trigger channel. In some applications the driver cannot use swiping gesture to navigate within the app pages e.g. when he is driving very fast or the display is to fare away to reach. With the internal trigger channel, it is possible to change the display page based on events.

When the Display page switch event channel is created and activated the app will switch to this page accordingly to the numerical value sent to this channel.

The Display page switch channel should be configured with start value = 0.

The page count starts from Zero for Page 1, 1 = Page 2, 2 = Page 3, etc…
The configuration below is a basic example how to use 2 digital inputs to trigger a page change event. When the user is actuating Digital Input 1 the page is scrolling forward (incrementing) and when he is actuating Digital input 2 the page is scrolling back (decrementing). Many other configurations are possible. The page change event can be executed via Limit channels too, where a specific page is loaded when the limit condition is true.

Example: Software channels to configure page change events

When a formula channel is created with determines your change page logic, you need to create a router element to send the data to the dedicated status channel Display page switch.

Example: Router channel to send page number from formula to “Display page switch” channel.

The formula should transmit a numerical value, which is indicating the page number you like to switch too. When the page number transmitted this page is loaded. However, if you send a page number which is not existing on the Mobile Display configuration the current page stays active.
6 New functions in DATA MANAGER

6.1 Tree display style

In the OPTIONS of IPEmotion you can change the tree structure of the data file and channel presentation.

Group / Signal

This is the traditional default setting of IPEmotion. Every storage group is represented as a separate grouping level based on the storage group name.

Tree default view: Group / Signal
File / Group / Signal

With the setting of File / Group / Signal you can add an overall file note based on the file name only to the tree with includes all storage groups together. This setting will make it easier to navigate between different data file (including one or several groups) originating from different measurement setups.
File / Signal
The file signal setting will remove all storage groups and provide only a list of all channels listed below the file name. All group names are removed, and a flat file list is presented.

6.2 Extensions on import / export drivers
- MATLAB Import and Export in 64 Bit IPEmotion
- BLF Import and Export in 64 Bit IPEmotion
- Import MDF4: Support for Ethernet traffic
- Import MDF4: Support for FlexRay traffic
- Import MDF4: Support for LIN traffic
- Import MDF4: Support for CAN and CAN FD traffic